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Project Review - I

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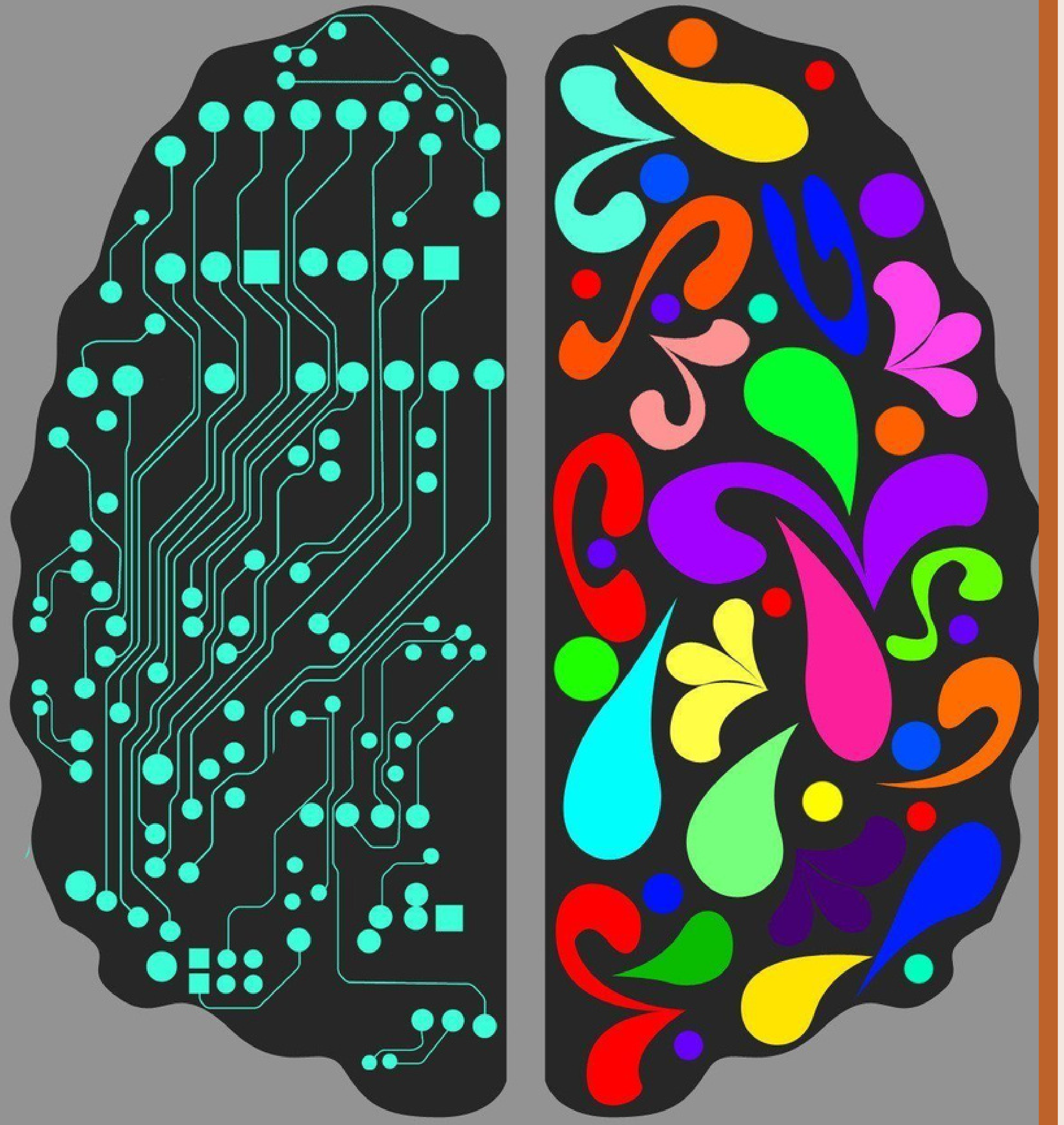
Overview



Problem Statement

Parkinson's Disease Diagnosis System

Using Deep Neural Network

Abstract

Parkinson's Disease is the 2nd most common brain disorder in the world, and the most rapidly growing one too. It's an anomaly of the central nervous system that causes symptoms like resting tremors, stiffness, and slowness of movement. The major problem with the diagnosis of this disease is that the symptoms are similar to that of some other diseases. There are pre-existing models present to help doctors in the diagnosis of Parkinson's Disease via voice monitoring as the patients experience voice tremors. These models use recorded voice clips of the patients to monitor the frequency and detect whether the patient has voice tremors or not.

This project aims to construct an optimized DNN model to employ vocal features to run a diagnostic to classify whether a person is affected by Parkinson's Disease or a healthy control.

Survey Table

S. No.	Author	Year	Methodology
1	Anila M, Pradeepini G	2021	Opt-DNN
2	N. P. Narendra, Björn Schuller	2021	Iterative Adaptive Inverse Filtering (IAIF) and Quasi-Closed Phase (QCP) Glottal Inverse Filtering Methods
3	Onur Karaman, Hakan Çakın, Adi Alhudhaif, Kemal Polat	2021	Transfer Learning

Base Paper(s) Summary

01

In the first paper, an optimized-DNN model is proposed and compared with the major classification models available like SVM, XGBoost, Random Forest, and KNN. The proposed model turns out to be the best performing model with an accuracy of 95.14%.

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02

In this paper, the author uses Iterative Adaptive Inverse Filtering (IAIF) and Quasi-Closed Phase (QCP) Glottal Inverse Filtering methods to achieve an accuracy of 67.93% in traditional pipeline systems, and an accuracy of 68.56% in end-to-end-systems.

03

In this paper, the model was considered with various architecture. SqueezeNet1_1, ResNet101, and DenseNet161 architectures were retrained and evaluated to determine which architecture can classify frequency-time information most accurately. The proposed model's accuracy is 89.75% for DenseNet-161 architecture.

Objectives

Objectives 1

To Design a DNN Architecture for vocal features.

Objectives 2

To Develop a DNN model with hyperparameter tuning and sampling techniques.

Objectives 3

To Publish a paper on the developed and implemented DNN model.

Thank

You